

REMARKS**Request for Interview**

Counsel for Applicant will be contacting the Examiner shortly to schedule an interview before the issuance of the initial Office Action.

History

This continuation reissue application is in response to the final Office Action, mailed August 11, 2000, in the parent to this case, serial number 08/986,327.

That final Office Action allowed Claim 81, but rejected Claims 1-80 based only on prior art.

Applicant's attorney asked to schedule an interview with the Examiner in the parent case (Examiner Adolf Berhane) to discuss this final Office Action. However, the Examiner declined to grant this interview in view of an earlier interview and the stage of the case.

Applicant's attorney then spoke with the Examiner to discuss how best to proceed. It was agreed that Applicant would pursue the rejected Claims 1-80 in a new continuation reissue application and would then file an amendment in the parent case canceling rejected Claims 1-80 so that allowed Claim 81 could issue without further delay.

Purpose of this Preliminary Amendment

Applicant is filing this Preliminary Amendment to reassert the claims that were rejected in the parent case, i.e., Claims 1-80. All of the claims as originally filed in the parent reissue application have been cancelled. New claims 47-126 have been added. These claims are the same (except for the numbering) as claims 1-80 as currently pending and rejected in the parent application. Applicant is also providing the following remarks in response to the prior final Office Action and in support of these claims, and a Rule 132 Declaration ("Rule 132 Declaration") from one of the inventors who is an expert in the field, is filed herewith. (The claim 30 mentioned therein corresponds to claim 76 added above.)

Nature of outstanding rejection

The Examiner in the above-mentioned final Office Action rejected Claims 1-80 under 35 USC 103(a) as being unpatentable over Applicant's admitted prior art (Fig. 2 in the reissue application) in view of *Masuda et al.* (U.S. Patent 4,107,757). The Examiner stated that "*Masuda et al.* . . . teach[es] that a charge storage element as C1 in figure 1 can be used as a voltage source" and "[t]herefore it would have been obvious . . . to replace the voltage source of Applicant's admitted prior art figure 2 with the charge storage element in order to provide steady and cost effective power source."

Applicant respectfully disagrees.

Analysis

Applicant has never disputed that a charged capacitor was a known source of voltage. But this is not responsive to the limitation that is recited in the pending patent claims. What had not been disclosed or suggested was a system of the type here that recovered energy from a capacitive load and stored that recovered energy "substantially only in capacitance"¹ (emphasis added), as now required by every pending claim.

Masuda et al. plainly does not meet this claim requirement. As explained in the Rule 132 Declaration in more detail, the capacitor C1 in *Masuda et al.* was only part of their energy storage system. The other part was the energy-storing inductor L. As shown in Figure 1 of *Masuda et al.*, the two are connected in series. They form a "series resonant circuit" for "generating transient oscillations." See Abstract.

In order to shuttle energy back and forth between the load 20 and C1 in *Masuda et al.*, the sine-wave-shaped current through the inductor must be interrupted at the very moment it crosses zero. Otherwise, noisy and undesirable ringing and high voltage transients would result. As a practical matter, however, this is difficult to do. It requires precise timing circuitry and, even with this, can be noisy and create high voltage transients.

¹ The phrase "substantially only in capacitance" is intended to embrace capacitive systems that have a small amount of inductance due to stray or parasitic inductance or even the intentional inclusion of a small discreet inductor. What is intended to be excluded are systems such as *Masuda et al.* in which a large portion of the recovered energy is stored in inductance at some point during the recycling process.

The present invention, on the other hand, shuttles current between the load 12 and the storage capacitor 18 without any ringing, high voltage transients or critical timing circuitry. The necessary differential between the load voltage and the tank capacitor 18 is created by a totally different mechanism -- switching in the higher potential source V -- not by generating transient oscillations.

A good analogy to *Masuda* is a very large source water tank for the source capacitor C_1 , a small load water tank for the load 20, a pump with a heavy rotator for the inductor L, a filling valve for the switch S_0 , and an emptying valve for the switch S_1 .

Initially, the source tank is half full, the load tank is empty, and the valves are closed. To begin filling the load tank, the filling valve is opened. The higher water level in the source tank causes a pressure that forces the water through the pump and into the load tank. In the meantime, the pump rotator begins to rotate and picks up speed. When the load tank becomes half full, the level of the water in the source and load tank become equal. Yet, the heavy rotator in the pump keeps rotating due to inertia, causing additional water to be drawn from the source tank into the load tank. The pump will stop just about when the load tank is full. The filling valve is then closed.

When it is time to empty the load tank, the emptying valve is opened and the same process repeats in reverse.

Just like the inductor in *Masuda*, however, the pump in this analogy is bulky and expensive. Just like with *Masuda*, however, there is no suggestion in this analogy of a way to eliminate the pump. To the contrary, and also just like *Masuda*, the system would not even work if the pump were eliminated. The load tank would fill half way and then could not be emptied without wasting water (energy in *Masuda*), e.g. by drilling a hole in the bottom of the load tank.

In short, combining the teachings of *Masuda et al.* with the admitted prior art would not result in a system in which energy was "always stored substantially only in capacitance" (emphasis added), as now required in every patent claim. Neither *Masuda et al.* nor the admitted prior art teaches this important feature, either alone or in combination.

The Federal Circuit has also repeatedly made clear that there must be a suggestion or motivation to combine the prior art in the manner of the invention to support an obviousness rejection:

Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.

In re Dembiczak, 175 F.3d 994, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999) (determination of obviousness reversed). A naked allegation that a feature was “widely known” is also not sufficient:

Dr. Rodriguez testified that it was “widely known” when she was in graduate school that micronized drugs could be blended with spray-dried lactose to achieve good content uniformity and good dissolution; no documentary support is shown for this statement. Such recollections by an expert witness, when challenged, particularly of asserted general scientific knowledge, require support by documentary evidence in order to receive probative weight.


Upjohn Co. v. Mova Pharmaceutical Corp., 225 F.3d 1306, 56 U.S.P.Q.2d 1286 (Fed. Cir. 2000).

Here, there was no suggestion in the prior art to modify the series resonant circuit in *Masuda* to eliminate the inductor. To the contrary, and as noted above, *Masuda* would not even conserve energy work with such a change. Further, and as also established by the Rule 132 Declaration, replacing supplies in the admitted prior art (Figure 2) with capacitors was a change that even experts thought would not work. (It took complex mathematical calculations to prove these experts wrong. *See* Startup Energies in Energy-Recovery CMOS (Ex. 2 to the Rule 132 Declaration).) Leaving the inductor out was viewed as so innovative that this change was recited as the title of a contemporaneous article about the invention: “Adiabatic charging without inductors.” (Ex. 3 to the Rule 132 Declaration).

The claimed invention was not obvious in view of *Masuda et al.* and the admitted prior art, and allowance of the claims is in order.

It is respectfully requested that the Patent Office take the foregoing into account when calculating the filing fees and that Examiner take it into account when examining this continuation reissue application.

Respectfully submitted,



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